

What Is Claimed:

- Sub B
1. A laminating device for providing a reinforced region of material supply web,
comprising:
5 a primary feeding mechanism cooperating with a primary supply web for
advancing a predetermined length of the primary supply web;
a secondary feeding mechanism for advancing a predetermined length of
secondary web;
10 a cross web shearing apparatus positioned downstream from the secondary
feeding mechanism for receiving the predetermined length of the
secondary web, the cross web shearing apparatus including a shear blade
positioned substantially perpendicular to the secondary material web and
movable through a cutting motion to cause a reinforcing strip to be
sheared from the secondary web;
15 a handling drive positioned adjacent the shearing apparatus for receiving the
reinforcing strip and moving it to a sealing location adjacent the base
primary web; and
a laminating device located proximate the handling manifold for sealing the
reinforcing strip to the base material web.
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2. The laminating device of claim 1 wherein the cross web shearing apparatus
further comprises a support blade positioned substantially perpendicular to the shear blade and in
a cutting relationship therewith such that the shear blade and the support blade cause the hearing
of the reinforcing strip.
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3. The laminating device of claim 1 wherein the primary feeding mechanism is a
driven primary feed roller controlled to feed the predetermined amount of the primary web.
4. The laminating device of claim 1 wherein the secondary feeding mechanism is a
30 driven secondary feed roller controlled to feed the predetermined amount of the secondary web.

5. The laminating device of claim 1 wherein the primary web is oriented polypropylene.

6. The laminating device of claim 1 wherein the primary web is metalized oriented
5 polypropylene.

7. The laminating device of claim 1 wherein the handling device is a vacuum
applicator manifold using a vacuum signal to hold the reinforcing strip.

8. The laminating device of claim 1 wherein the handling device comprises a plurality of applicator manifolds each using a vacuum signal to hold the reinforcing strip.

9. The laminating device of claim 8 wherein the plurality of applicator manifolds are attached to a rotation block, wherein the rotation block is rotatable about a central axis to appropriately position the plurality of applicator manifolds.

10. The laminating device of claim 1 further comprising a holding clamp positioned adjacent the cross web shear and the handling device, such that the holding clamp will hold the secondary web against the handling device prior to shearing the reinforcing strip.

11. The laminating device of claim 10 wherein the holding clamp includes a holding tab movable between a feeding position and a holding position, wherein the holding tab allows the secondary web to be feed between the holding clamp and the handling device when the holding tab is in the feeding position while the holding tab holds the secondary web against the holding mechanism when the holding tab is in the holding position.

12. The laminating device of claim 1 wherein the shear blade is curved and the cutting motion is a rocking motion.

30 13. The laminating device of claim 12 wherein the shear blade includes a plurality of cam tracks that cooperate with plurality of the cam followers to cause the rocking motion.

14. The laminating device of claim 13 wherein at least one of the cam followers are attached to a cam follower framework, wherein movement of the cam follower framework generates the cutting motion.

Sub B³ 5 15. The laminating device of claim 14 wherein the cam follower framework is moved is a substantially linear path.

10 16. The laminating device of claim 2 wherein the shear blade includes a plurality of cam tracks that cooperate with plurality of the cam followers to cause the cutting motion to be a rocking motion, and wherein the plurality of cam followers includes a cam pin attached to the blade and cooperating with a cam track attached to the support blade to create the rocking motion.

Sub B⁴ 15 17. The laminating device of claim 16 wherein the shear blade includes a plurality of cam tracks that cooperate with a plurality cam followers which attached to a cam follower framework, wherein movement of the cam follower framework generates the cutting motion.

20 18. The laminating device of claim 17 wherein a cam framework actuator causes movement of the cam follower framework resulting in the rocking motion of the rocking motion.

19. The laminating device of claim 2 wherein the shear blade extends only a predetermined distance below the support blade at any time.

25 20. A cross web shear device for accurately shearing predetermined strips of material from a supply web traveling in a web direction, the cross web shear device comprising:
a shear blade positioned substantially perpendicular to the supply web and perpendicular to the web direction, the shear blade having at least one cam track therein;
a support blade positioned substantially parallel with the supply web and perpendicular to the web direction; and

5 a blade actuator having at least one cam pin, the at least one cam pin cooperating with the at least one cam track to cause the blade to move through a cutting motion when the blade actuator is actuated, the support blade and the shear blade positioned in a cutting relationship with one another to shear the predetermined strip of material when the cutting blade moves through its cutting motion.

10 21. The cross web shear of claim 20 further comprising a cam framework attached to the support blade and a cam pin attached to the shear blade for further controlling the motion of the shear blade.

15 22. The cross web shear of claim 20 wherein the shear blade extends only a predetermined distance below the support blade at any time.

20 23. The cross web shear of claim 20 wherein the shear blade is curved and the cutting motion is a rocking motion.

25 24. The cross web shear of claim 21 wherein the at least one cam track includes a first cam track and a second cam track, and the at least one cam pin includes a first cam pin and a second cam pin, both the first cam pin and the second cam pin movable along a predetermined path by the actuator wherein movement of the first cam pin and the second cam pin along the predetermined path causes the blade to move through its cutting motion.

30 25. The cross web shear of claim 23 wherein the cam framework includes a framework cam track cooperating with the cam pin attached to the shear blade, and wherein the cutting motion is a rocking motion controlled by the configuration of the first cam track, the second cam track, and the framework cam track.

SUB B'S 26 25. A method for producing a reinforced web of material, comprising
(a) providing a primary web of material
(b) providing a secondary web of material, the secondary web of material making up a reinforcing material for attachment to the primary web;

- (c) cross web shearing a strip of the secondary web in a direction perpendicular to a direction of travel for the secondary web;
 - (d) positioning the sheared strip of the secondary web adjacent the primary web such that the sheared strip is substantially perpendicular to a direction of travel for the primary web; and
 - (e) attaching the sheared strip to the primary web.

26. The method of claim 25 where the step of attaching the sheared strip comprises heat laminating the sheared strip to the primary web.

10 28 27 The method of claim 26 wherein the cross web shearing comprises feeding the
secondary web material to a predetermined position within a cross web shear apparatus, holding
the secondary web material in the predetermined position, and actuating a shear blade to travel
through a predetermined shear blade motion.

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28. The method of claim 27 wherein the predetermined shear blade motion is a
rocking motion.

29. The method of claim 28 wherein the step of actuating the shear blade includes the
20 steps of moving a plurality of cam pins through a predetermined path, the cam pins cooperating
with the shear blade to cause the blade to move through its rocking motion.

30. The method of claim 29 wherein the cam pins cooperate with a plurality of cam tracks in the shear blade such that the step of actuating the shear blade includes moving the cam pins causes them to travel along the cam tracks.

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31. The method of claim 26 wherein the step of positioning includes securing the
ed strip to a positioning device and moving the positioning device to the position adjacent
primary web.

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32. The method of claim 31 wherein the step of securing the shear strip involves creating a vacuum signal within the positioning device, thus creating a vacuum seal between the positioning device and the sheared strip.

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33. An apparatus for producing a supply of material in a web format having reinforcements in predetermined locations, comprising:

a primary supply feed roller coupled to a primary web to move the primary web in a predetermined manner;

a secondary supply feed roller coupled to a secondary web to move the secondary web in a predetermined manner;

10 a cross web shear device having a shear blade and a support blade, the cross web shear device positioned to receive the secondary supply web at a cutting position between the shear blade and the support blade, the cross web shear further having a blade actuator for moving the blade through a cutting motion after the secondary supply web has been positioned at the cutting position resulting in a reinforcing strip to be sheared from the secondary web;

a movable applicator having an applicator manifold positionable in a cutting position adjacent the cross web shear such that the secondary web extends adjacent a holding surface of the applicator manifold when the secondary web is in the cutting position, the applicator manifold having a plurality of vacuum apertures in the holding surface to create a vacuum seal between the secondary web and the holding surface when the secondary web is in the cutting position, the movable applicator movable between cutting position and a delivery position allowing movement of the reinforcing strip to an attachment location; and

20 an attachment device positioned adjacent the primary web and adjacent the applicator delivery position, wherein the reinforcing strip can be attached to the primary web at a reinforcing location by the attachment device cooperating with the applicator.

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34. The apparatus of claim 33 wherein the attachment device is a laminating device
30 having a heating element to attach the reinforcing strip via a heat seal.

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- 38 35.* The apparatus of claim *33* wherein the cutting motion is a rocking motion.
- 37 36.* The apparatus of claim *35* wherein the rocking motion is created by a plurality of cam tracks in the cutting blade and a plurality of cam pins coupled to the blade actuator.

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